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Proposal for terminology in the field of sustainability

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Abstract

This paper proposes the construction of specialized terminology in an interdisciplinary field, Sustainability. It is based on Communicative Terminology Theory (CTT) and on the principles and methods established by ISO and NBR standardization norms. The interdisciplinary nature of Sustainability poses challenges for the development of terminology, as it is necessary to bring together concepts from different areas of expertise.

1.0 Introduction

Interdisciplinary knowledge is obtained from the convergence of approaches from different disciplines around a common research theme. The objects of analysis in interdisciplinary research are examined from different perspectives with the aim of integrating ideas, methods, theories, tools, techniques, and information. Sharing information in interdisciplinary research is a challenge because scientific communication is hampered by the different terminologies and concepts used in different fields. The importance of standardizing terminology is emphasized not only at the formal and informal levels of scientific communication but also through information mediation activities reflected in the processes of indexing and retrieval of information media.

The field of Sustainability embodies this challenge because its objects, phenomena, and problems are interdisciplinary, given that the material traits of entities are segmented to the point that the whole can only be completed through the co-participation and integration of different disciplines. Thus, this work has the general objective of presenting a methodology based on the Communicative Theory of Terminology (CTT) and aimed at surveying the terminology of an interdisciplinary domain: Sustainability. Specifically, it also aims to attest to the relevance of terminology in the field of Sustainability as a semantic and conceptual tool for building a Knowledge Organization System (KOS). Terminological practices and content analysis were used as methodological procedures. The proposal for terminology extends beyond its pragmatic functionality, since its establishment falls within the approaches of Hjørland's (2002) domain analysis, which would characterize a particular domain of knowledge.

2.0 The interdisciplinary field of Sustainability

In isolation, the concept of sustainability refers to a generic practice not linked to a discipline, area, or field of knowledge. Sustainability is an intrinsic quality of natural and cultural entities to adapt to adverse conditions in order to preserve the continuity of life. According to Miller and Spoolman (2012), sustainability involves natural and cultural systems and their ability to survive, thrive, and adapt to changing environmental conditions. Sustainability is not a concept that refers only to environmental protection, climate change, or the preservation of natural resources. It is a term that extends to the cultural sphere and holds individuals and society responsible for building a sustainable natural and social environment.

Another expression that has gained prominence in recent times is sustainable development. According to Kruglianskas and Pinsky (2014), development must be carried out in a way that does not reduce the possibilities for future generations to also develop. This term is simple in essence but complex in its application, as it brings together different actors in the process of promoting sustainable development, who need to equally manipulate various aspects within different contexts, such as political, economic, social, urban, ecological, biological, educational, and scientific.

The approach to sustainability is segmented across different areas that apply their knowledge to discover technical and scientific solutions to complex problems. Different fields of knowledge appropriate the concept of sustainability and incorporate it for use in their own fields. The objects and phenomena related to sustainability are interdisciplinary, thus forming a thematic field of research whose knowledge is the result of a practice of translating concepts that, when taken out of context, take on new meanings but remain interdependent with other concepts, thus forming a network. This network has the potential to become a domain of knowledge because it brings together scholars, researchers, intellectual productions, and academic events around a theme. The knowledge network derived from sustainability has the capacity to construct a particular terminology.

3.0 Terminology

Terminology is responsible for the construction of specialized languages (Barros 2004), that is, artificial languages of a particular area of knowledge that are used, according to Frizon and Baptista (2015), to express scientific or professional discourse.

According to Cabré (1995), terminology can be analyzed from three approaches: discipline, practice, or product. For the purposes of this work, we consider the aspects of practice and product. As a practice, it provides the principles and methods for constructing terminology, a process that involves collecting terms, their concepts, and their standardization. As a product, terminology is the set of standardized terms that represent a system of concepts in a domain, where only one term corresponds to one concept and only one concept corresponds to one term (Associação Brasileira de Normas Técnicas 1997a).

Terminology also stands out because of its communicative and prescriptive nature. Promoting knowledge exchange and communication between peers, serving as a learning tool, and mediating the search for information between users and information systems are the assumptions that underpin terminology. Its prescriptive nature is based on the need for standardization that communication demands.

4.0 Methodological procedure

The methodology used focused on the principles and methods determined for the construction of terminology, based on ISO 1087 (International Organization for Standardization 2019), NBR 13789 (Associação Brasileira de Normas Técnicas 1997a), and NBR 13790 (Associação Brasileira de Normas Técnicas 1997b). Considering the chosen area of expertise, Sustainability, which essentially brings together different conceptual perspectives, this work and its methodology were based on Cabré's Communicative Theory of Terminology (CTT) (Cabré 1995).

The terminography method is subdivided into the following stages: identification and collection of terms; survey of concepts; selection of important terms; analysis and definition/synthesis of concepts; and arrangement of terms.

The steps of identifying, collecting, and surveying terms and concepts were carried out through bibliographic research. First, we established basic keywords taken from the field of sustainability that represented the generic terms in the area, as shown in Table 1.

Table 1 Keywords

Sustainability	Sustainable Development	Climate Change	Environment
Natural Resources	Preservation	Conservation	

(Source: prepared by the authors)

The search strategies – Table 2 – were applied in the advanced search of the Scielo databases and CAPES journal portal. The period between 2010 and 2025 and the Portuguese language were determined. The Scielo database did not allow searching by subject, so the title and abstract fields were used. Scielo allows documents to be filtered by area, so the areas of Architecture, Economics, Engineering, Meteorology, Environmental Sciences, Ecology, Biological Sciences, and Agricultural Sciences were chosen. On the CAPES journal portal, the areas chosen were: Applied Social Sciences, Biological Sciences, Engineering, Agricultural Sciences, Exact and Earth Sciences, Humanities, and Multidisciplinary Sciences. CAPES provides additional filters, of which the following were used: peer-reviewed articles, open access, Brazilian production, and Portuguese language. CAPES allows searching by subject; however, when searching via this field, no results were obtained, so the index called “any field” was used.

Table 2 Search strategies

"Sustainability" or "Sustainable Development" or "Climate Change" or "Climate Change"
"Natural Resources" and "Preservation" or "Conservation"
"Environment" and "Preservation" or "Conservation"

(Source: prepared by the authors)

The results obtained in the bibliographic search process were organized into a dataset. The next step was to collect the terms. For this stage, we chose to use the content analysis method, as it is a research technique whose purpose is the objective, systematic, and quantitative description of the content of a document (Bardin 2008) and which allows information to be extracted through the analysis of discourse statements.

Once the terms had been selected, we proceeded to the concept identification phase. In this stage, we worked on identifying the characteristics that make up the concepts of the selected terms. Content analysis was also used as a method for this stage. For each term, we selected three articles and extracted a comprehensive definition of the term from each article. After extracting the definition, we identified the elements that characterize the concept.

Finally, we propose a summary definition by selecting characteristics within the paradigmatic axis and (re)ordering them in a syntagma, as well as establishing the different types of relationships — equivalence, hierarchical, and associative.

5.0 Results

In the bibliographic survey, observing all the stipulated parameters, we obtained 3,831 recovered documents. However, given this high number, it was necessary to reduce the scope of the results through content analysis applied to the titles and abstracts of the documents, which was fundamental to the research because it significantly reduced the list of selected documents:

Table 3 Results of the literature review

Database	**Scielo**	**Capes**	**Total**
Total documents	2,063	1,768	3,831
Documents after analysis	904	614	1,518

(Source: prepared by the authors)

The documents were distributed into categories according to their field of knowledge:

Table 4 Distribution of articles in their respective areas of expertise

Areas	Architecture	Economics	Engineering	Meteorology	Ecology	Environmental sciences	Biological sciences	Agricultural sciences
Documents	76	121	227	56	139	491	76	332

(Source: prepared by the authors)

Once the articles had been selected and categorized, we (re)applied content analysis to the title and abstract of the documents and noted the keywords assigned. We then identified and collected terms related to the area of sustainability. In total, we obtained 1,029 terms. After removing duplicate terms, we obtained 603 terms related to the theme of sustainability.

The construction of the summary definition of the terms, according to terminography methods, involves the construction of terminology files for each term. For the purposes of this research, the files were arranged in a spreadsheet, thus forming a terminology database. We selected four terms as examples and present the data collected:

Table 5 Terminology file

Id	Term	Summary definition	Non-preferred term	General term	Specific terms	Related terms
1	Environmental assessment	Planning tool used to analyze the environmental and social impacts and consequences of human actions, potential changes in the environment, and the life cycle of products.		Environmental management	Environmental impact assessment Strategic environmental assessment	Climate assessment Environmental impact
2	Environmental	Environmental imbalance caused directly or indirectly by human activity, resulting	Environmental destabiliz	Climate change		Environmental assessm

Id	Term	Summary definition	Non-preferred term	General term	Specific terms	Related terms
	impact	in climate change, environmental changes, and damage to the physical, chemical, and biological properties of the affected areas, as well as negative socioeconomic consequences and effects.	ation			ent Climate impacts
2	Thermal efficiency	The ability of facilities, buildings, and materials to maintain thermal equilibrium between external and internal environments, reducing heat transfer and providing thermal comfort.	Thermal performance	Thermal comfort		Thermal stress
3	Thermal stress	Disruption in the body's thermoregulation mechanism, where heat from undesirable thermal environmental conditions, such as high air temperature and humidity, is processed in thermogenesis but is not dissipated in thermolysis to the environment, causing an imbalance and increase in body temperature.		Thermal comfort		Thermal efficiency

(Source: prepared by the authors)

6.0 Conclusion

Considering the objective of this study, the methodology applied, and the results obtained, we believe that there is a demand and need for the construction of terminology in the field of sustainability. Based on the bibliographic survey and content analysis, we encountered a difficulty that highlighted the relevance of terminology, since many documents from different areas addressed the same concepts and dealt with the same subjects but used different terminological notations. Nevertheless, we found that in several articles, a

concept was represented in the document itself by different terms, whether in the title, keywords, or body of the text.

We also highlight the significant absence of a Knowledge Organization System focused on the field of Sustainability as a tool for documentary analysis. This is because the indexing of technical and scientific publications focused on sustainable development does not include conceptual representation for the specific subjects of the documents, thus hindering their retrieval.

We hereby declare that no Artificial Intelligence (AI) tools or resources were used in this research.

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